Mountains, People and Waste

- a map of population density in mountain regions

HUMAN WASTE
Denali, United-States

Since 1970, 34,000 persons have attempted to climb Denali (formerly known as Mount McKinley), in the process generating an estimated 66 metric tons of faeces, leading to bacteria, viruses, and other pathogens contaminating waterways and soils.

COMPOSTING
Mexico city, mexico

In 2012, Mexico City opened its first large-scale composting plant. Composting is one way for municipalities to recycle and reduce the amount of waste which ends up in dumpsites and landfills.

TOURISM
Machu Picchu, Peru

Large amounts of waste generated by visitors to Machu Picchu (a 15th century Inca citadel) contributed to new regulations requiring guides to properly store, sort and discard waste.

MOUNTAIN CITIES
Cochabamba, Bolivia

Millions of tonnes of waste at the K'ara K'ara dumpsite near Cochabamba has prevented the local population from safely using groundwater. New waste management laws enforce source separation and recycling activities.

SKIING
The Alps, Europe

Skiing brings numerous waste challenges from wrappers and bottles thrown on the slopes, to the waste produced in operating ski resorts.

ILLEGAL DUMPING
Sochi, Russian Federation

Infrastructure requirements for the 2014 Winter Olympics, held in Sochi (northern Caucasus), drove a huge construction boom. Large amounts of construction and other waste was reportedly illegally dumped by construction companies across dozens of sites in the region before and after the games.

TOURISM
Lenin's Peak, Kyrgyzstan

Lenin's Peak is one of the easiest 7000 m peaks to climb and has also accumulated lots of rubbish. The "Keep snow clear" campaign created a competition for mountaineers to collect as much litter as they can.

DISASTER WASTE
Kathmandu, Nepal

The 2015 earthquake in Nepal generated 3,94 million tonnes of debris just in Kathmandu Valley, the equivalent of 11 years of waste. Some of it includes hazardous waste such as asbestos insulation.

PLASTIC POLLUTION
Kigali, Rwanda

Rwanda has implemented a ban on non-bio-degradable plastic bags. Kigali, the nation's capital, is now one of the cleanest cities in Africa.

E-WASTE
Nairobi, Kenya

The increasing use of electronic devices is leading to a growing problem of electronic waste. A new 'Waste Electrical and Electronic Equipment Centre' collects, dismantles and processes e-waste in Nairobi.

TAILINGS DAM FAILURE
Bento Rodrigues, Brazil

The 2015 dam collapse at the Germano iron ore mine had an immense social, environmental and economic impact. At least 17 people died and toxins from the tailings reached several hundred kilometres downstream.

MINING WASTE
Ok Tedi Mine, Papua New Guinea

Mine waste from Ok Tedi mine has affected the livelihoods of over 30,000 people living downstream, decreasing fish stocks and causing extensive dieback of forests.

Population density in mountain regions (number of people / km²)

< 5	100 - 200
5 - 25	200 - 350
25 - 50	350 - 500
50 - 100	500 - 1,000

Sources: CIESIN, Columbia University (2016) Gridded Population of the World, V.4 accessed on 11.29.2016; UNEP-WCMC 'Mountains of the World 2000' Mountains derived from U.S. Geological Survey National Mapping Division, EROS Data Center (EDC) (1996) GTOPO30 ; Natural Earth.

This map shows population density in all mountain regions as defined by the UNEP-WCMC 'Mountains of the World 2000' data. Mountains are defined as areas with an elevation from 300 to 1000m and a local elevation range >300m; or an elevation from 1000 to 1500m and a slope ≥ 5° or a local elevation range >300m; or an elevation from 1500-2500m and a slope ≥ 2°; or an elevation ≥ 2500m.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/99 and the ICJ Opinion on the Kosovo Declaration of Independence.

Mountains play an essential role in supplying water and other services, such as food, energy and biodiversity, to the millions of people living in the mountains and downstream.

This map shows where mountains are located around the world and the human population densities within these regions. Short case studies, which are referred to in the accompanying *Waste Management Outlook for Mountain Regions - Sources and Solutions*, highlight the variety of waste challenges and opportunities in mountain regions.

Map by Levi Westerveld (2016) for GRID-Arendal
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